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ABSTRACT

This report presents findings on the early work experiences of youth with disabilities, part of a 5-year study on the transition of youth with disabilities from secondary school to early adulthood. The study examined trends in students' career development by comparing employment characteristics 2 and 4 years after leaving secondary school. Telephone interviews were conducted first in 1987 and then in 1989 with approximately 800 youth who had left school between 2 and 4 years earlier or with their parents. Students had been classified as being learning disabled, seriously emotionally disturbed, speech impaired, or mildly or moderately mentally retarded. Major findings indicated: youth in all categories (except serious emotional disturbance) went from an employment rate of about 50 percent in the 1987 survey to more than 67 percent employment 2 years later; among youth employed, substantial wage and occupational advancement took place; and the youth tended to be satisfied with their jobs and to expect further advancement. Less positive findings included the low employment rates and lack of progress of students with serious emotional disturbances and the significant numbers of students never employed since leaving school--20 percent of the emotionally disturbed, 17 percent of the mentally retarded, and 18 percent of the speech impaired. (31 references) (DB)

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THE EARLY WORK EXPERIENCES OF YOUTH WITH DISABILITIES: TRENDS IN EMPLOYMENT RATES AND JOB CHARACTERISTICS

A Report from the National Longitudinal Transition Study of Special Education Students

September 1991

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The Office of Special Education Programs
U.S. Department of Education

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THE EARLY WORK EXPERIENCES OF YOUTH WITH DISABILITIES: TRENDS IN EMPLOYMENT RATES AND JOB CHARACTERISTICS

Ronald D'Amico and Camille Marder

The transition experiences of youth with disabilities have occupied an increasing amount of the attention of practitioners and researchers over the last decade. Without adequate attention to the "bridges" linking schooling experiences to adult outcomes, it is recognized, even well-developed and intensive programs of vocational training for these youth will fall short of fulfilling their promise of improving employment prospects.

Several recent follow-up studies of high school exiters have begun to provide necessary data about the employment experiences of youth with disabilities and, in particular, about the school experiences that facilitate their transition. Nonetheless, essential pieces of information are still lacking. One obvious omission relates to the virtual absence of work-history data. Specifically, because most follow-up studies have collected data on youth at a single point in time, we know little about how careers unfold over even just the few years after youth with disabilities leave school. This report fleshes out this picture by describing employment experiences over a several-year period for a nationally representative sample of youth who were classified in one of several disability categories while they were secondary school students.

Background

The Education for All Handicapped Children Act of 1975, the Carl Perkins Act of 1984, and other recent pieces of federal legislation have revolutionized the educational services received by youth with disabilities by mandating that students in special education have equal access to vocational training and that they receive appropriate education and other services in the least restrictive environment. Although much work remains to be done, recent evidence suggests that many schools have taken their mandate to heart. For example, Wagner (1991), using data from the National Longitudinal Transition Study, shows that a substantial percentage of students in secondary special education attend schools that purport to provide prevocational and vocational skills training to special education students. She shows further that more than 80% of 11th and 12th graders took at least one course in vocational education in their most recent school year, overwhelmingly in regular education. Although the overall adequacy and intensity of this coursework may be questioned (e.g., Fardig, Algozzine, Schwartz, Hensel, and Westling, 1985), Mithaug, Horiuchi, and Fanning (1985) report from the Colorado statewide follow-up study that most recent special education graduates found their schools' special education and vocational education programs helpful in preparing for the future.

Nevertheless, even a solid foundation provided to students in special education by their schools may prove inadequate without provisions for "bridging the gap" between schools and adult attainments (Will, 1984). A flurry of recent work has detailed the key components of transition planning, including the formulation of an individualized transition plan for each student, the forging of interagency agreements, and the provision of placement services (e.g., Wehman, Moon, Everson, Wood, and Barcus, 1988; Wehman, Kregel, Barcus, 1985; Hasazi, 1985).

As schools move to implement these recommendations, the need for comprehensive follow-up data for purposes of assessment and evaluation becomes critical. Without information on what works and why, school administrators are unable to fine-tune their programs and focus resources on interventions having the greatest likely impact. Fortunately, a number of recent follow-up studies of special education exiters have begun to fill this need (e.g., Mithaug et al., 1985; Edgar, Levine, and Maddox, 1985; Hasazi, Gordon, and Roe, 1985; Zigmond and Thornton, 1985; Sitlington, Frank, and Cooper, 1989), including early results from the National Longitudinal Transition Study (NLTS). Using NLTS data, D'Amico (1991) reports rates of competitive paid employment for youth with disabilities who recently left secondary school that range from 57% for youth classified as learning disabled to under 10% for youth classified as multiply handicapped. Among those who work, employment is often part-time, in low-skill jobs, and at poverty-level wages, although some youth seem to fare quite well. Encouragingly, we also have some evidence that employment prospects have improved over the last generation (e.g., Brown, Shiraga, Ford, Nisbet, VanDeventer, Sweet, York, and Loomis, 1983; International Center for the Disabled, 1986).

What is still largely lacking, however, is an understanding of what happens next—how the employment experiences of youth with disabilities evolve in the first few years after they leave high school. This information is critical. For example, whether employment rates trend upward or downward obviously matters greatly to our interpretation of the transition process. Moreover, experiences during the first few years after youth leave school can be a critical determinant of subsequent employment success. Research on youth in the general population suggests that prolonged early joblessness can cause "scarring" that thereafter acts as a drag on subsequent employment and wages (e.g., Lynch, 1989; Ellwood, 1982). Whether similar scarring occurs for youth with disabilities has not yet been empirically established but seems likely—those who have access to employment early in their lives can develop their work attitudes and behaviors, hone their work skills, and demonstrate their reliability to skeptical employers. Establishing a pattern of employment early on, therefore, may be critically important.

Despite the potential importance of this period, we have little hard data on how the careers of youth with disabilities develop. In one of the few studies with longitudinal data, Hasazi et al. (1985) show essentially no change in employment rates for a cohort of recent exiters in one state who were surveyed twice, 1 year apart. On the other hand, Baller, Charles, and Miller (1967) suggested that the years after youth with disabilities leave school are marked by a gradual improvement in their employment experiences. We know from an extensive body of literature that such an improvement does characterize the transition experiences of noncollege

youth in the general population. After an initial period marked by frequent spells of joblessness, weak labor force attachments, and seemingly directionless job hopping (e.g., Freedman, 1969; Osterman, 1980 and 1989), their employment relationships stabilize and the job hopping drastically tapers off. Assuming that similar mechanisms apply for youth with disabilities, we are led to hope that the disappointingly low employment rates observed in several recent follow-up studies (e.g., the 55% reported by Hasazi et al., 1985) will move decisively upward as youth age.

On the other hand, their employment outcomes very well may remain stagnant or even worsen over time. Evidence shows that few secondary special education students attend schools that provide postemployment follow-up services to youth with disabilities (Wagner, 1991). Therefore, youth with special needs may lack potentially important support services during the critical period when they are attempting to establish a toehold in the labor market. Moreover, to the extent that some youth with disabilities experience difficulty, once they leave school, in retaining jobs that were arranged as part of a high school program, we might even see a gradual decline in their employment rates over time.

The purpose of this report is to shed further light on the transition process by describing how careers unfold over several years for a cohort of recent exiters from special education whose schools classified them as being learning disabled, seriously emotionally disturbed, speech impaired, or mildly or moderately mentally retarded. Specifically, we address the following questions:

- What were their employment rates in 1987, within 2 years after leaving secondary school? How had these rates changed when they were reinterviewed 2 years later?
- How stable do employment relationships appear to be, and why are some youth jobless?
- What were the characteristics of youth who reported being employed fairly steadily through these years, and how did they differ from those of youth who were never employed?
- How did the types of jobs the youth held (in particular, the hours worked per week, occupations, and wages) change over the several years after they left secondary school?
- Did they realize wage gains as they accumulated work experience? What were the characteristics of youth who were earning the highest wages?
- Were employed youth satisfied with their jobs, and what were their perceptions regarding opportunities for career advancement?

Data and Measurement

Data for these analyses were collected as part of the National Longitudinal Transition Study of Special Education Students (NLTS). The NLTS is an ongoing study being conducted by SRI International under contract to the Office of Special Education Programs (OSEP) of the U.S. Department of Education. As part of this study, data were collected for a national sample of more than 8,000 youth who were aged 13 to 21 and enrolled as students in special education in secondary schools in the 1985-86 school year.

The first wave of data collection occurred in the summer and fall of 1987, when telephone interviews were conducted with each youth's parent or guardian (hereafter called the parent interview). Information was elicited regarding family background characteristics, source and type of services received, whether the youth was enrolled in school during the preceding school year and/or planned to enroll for the upcoming school year, recent employment experiences, and social interactions. These data were supplemented by information abstracted from school records regarding the youth's course taking and performance during the most recent school year and by a mail survey sent to administrators in the schools the youth attended regarding school policies and programs and teacher and student body characteristics (see Appendix A for more details).

In the fall of 1989, a follow-up telephone survey was administered to a subset of these youth, or their parents if the parent deemed that the youth was unable to respond for him or herself (the youth was the primary respondent in approximately 65% of the cases, and a parent or other guardian was the respondent in the remaining cases). Information was collected regarding the youth's recent employment history, services received since leaving high school, and participation in postsecondary education or training. The follow-up sample (hereafter referred to as the exiter sample) consisted of more than 800 youth who had already left secondary school by the 1987 parent interview and who were classified as learning disabled, seriously emotionally disturbed, speech impaired, or mildly or moderately mentally retarded.* Thus, youth in the exiter sample had generally been out of secondary school for at least 2 years and up to 4 years by the time of the 1989 survey.

Separate sampling weights have been developed to improve the representativeness of the full NLTS and exiter samples. These weights are designed to correct for two general sources of potential bias, which were caused by the deliberate oversampling of youth in some disability categories when the NLTS sample was first drawn and by variations in nonresponse rates to the parent or exiter surveys for youth of different types. With respect to the first of these, deliberate

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* Specifically, included in the exiter sample were all youth out of secondary school who were in these disability categories *and* who were not also classified as having any additional impairment, including orthopedically impaired, deaf, hard of hearing, visually impaired, or other health impaired. Eleven youth also were included whose primary disability classification was hard of hearing or orthopedically impaired, but whose parents or schools provided information in 1987 indicating that their primary disability was a learning, speech, or serious emotional impairment.

oversampling was necessary because of the very uneven distribution of youth across disability categories. For example, of the approximately 1.5 million students in special education in the 1985-86 school year, about 57% were classified as learning disabled, but only 1% to 2% were in each of various other disability categories, according to the 1985-86 EHA-B Child Count (U.S. Department of Education, 1988). Based on these percentages, if the same sampling rate were used for youth in all disability categories, the NLTS sample would be expected to consist overwhelmingly of youth classified as learning disabled, whereas many other categories would include far too few youth to support the types of analyses envisioned for the NLTS. To boost the number of sample members in these lower-incidence categories, youth in some categories were sampled at a higher rate than were youth classified as learning disabled. When the data are being analyzed and used to support inferences to the universe of youth in special education as a whole, therefore, sampling weights must be used to rebalance the sample. These weights essentially "weight up" sample members classified as learning disabled, since they were undersampled relative to their actual representation in the universe, and "weight down" youth in certain other classifications, since they were oversampled.

The sampling weights were further refined to correct for potential nonresponse bias. For example, youth from households of lower socioeconomic status (SES) were more frequently nonrespondents to the parent survey, either because their parents refused to be interviewed or because they could not be located (e.g., had no telephones). The parent survey sampling weights correct for this by "weighting up" sample members drawn from demographic groups with higher nonresponse rates. The exiter survey sampling weights build on the parent survey sampling weights, but adds a further adjustment to correct for differential nonresponse to the exiter survey. (See Appendix A for more details on the NLTS sample design and weighting.)

Data from the parent and exiter surveys have been analyzed in a series of papers and reports prepared by NLTS project team members. *Youth with Disabilities: How Are They Doing? The First Comprehensive Report of the National Longitudinal Transition Study* (Wagner et al., 1991), for example, relies primarily on data from the parent survey and includes chapters that describe the demographic and disability-related characteristics of youth in all 11 federal special education disability categories, their school programs and school performance, and their social interactions and living arrangements. An additional chapter (D'Amico, 1991) examines the early employment rates of both in-school and recently out-of-school youth, describes the job characteristics of those who are employed, and models the determinants of postschool employment as a function of schooling, demographic, and other factors.*

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* For a complete list of reports and other products available from the NLTS, see Appendix B.

In this document, we add data from the exiter survey to build on these earlier results. Specifically, by using both parent and exiter survey data, we have information on employment experiences collected for exiter sample members at two points in time during the postschool period—in 1987 from the parent interview and again in 1989 from the exiter survey. Moreover, the exiter survey collected some retrospective work history data, including whether the youth had worked 1 year before the interview. Linking these data sources enables us to track the trend in postschool employment experiences, including rates of competitive paid employment and job characteristics.

Results reported in this report on employment status and job characteristics were developed from a series of questions in each survey that ask whether the youth currently has a paid job and, if so, for how many hours per week, at what pay, the type of work, and whether he/she does this work at a place where most of the other workers are disabled. For purposes of this report, competitive paid employment is defined to include working at a paid job where most coworkers do not have a disability. Unless otherwise noted, all results are reported after applying the exiter survey sampling weights.

All exiters were out of secondary school by the time of the 1987 survey, by definition, but some of them returned to school subsequently. To avoid having the trends in employment outcomes we observe influenced by the movement of some youth into or out of school, we further restrict the sample to those who were out of school continuously over the period covered by the surveys. Effectively, this restriction means that few attended postsecondary institutions of any kind. Of the 811 youth in the exiter sample with completed interviews, 530 meet this additional restriction. (Appendix C compares these 530 with the remaining 281 exiters to suggest how these two groups may differ.)

Table 1 reports the basic demographic and other characteristics for this subsample of exiters. Nearly 59% of them had been categorized as learning disabled, 30% as mildly or moderately mentally retarded, 10% as seriously emotionally disturbed, and 1% as speech impaired. A handful of respondents categorized with other disabilities also were interviewed as part of the exiter sample. Although the weighted frequency distribution shows that three-fifths of the exiters were categorized as learning disabled, the unweighted distribution of sample cases across the various categories is much more nearly equal.

This table also shows that about three-quarters of the weighted sample were male, about 28% were members of minority groups, and more than 80% were between the ages of 17 and 20 (in the summer of 1987). Nearly 40% had left secondary school without graduating.

Table 1

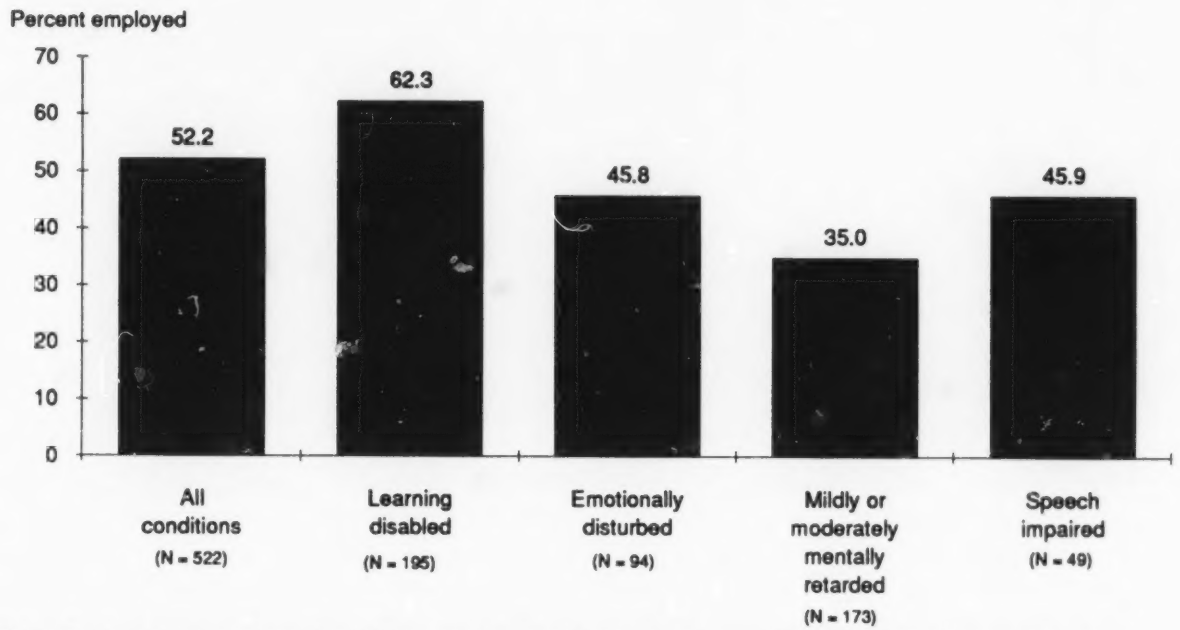
DEMOGRAPHIC AND OTHER CHARACTERISTICS OF YOUTH REPRESENTED BY THE EXITER SAMPLE

	Percent	Standard Error	Unweighted Cases
Disability category			
Learning disabled	58.6	3.7	199
Emotionally disturbed	10.5	2.3	94
Mildly or moderately mentally retarded	29.4	3.4	177
Speech impaired	1.4	.9	49
Other	.1	.1	11
Gender			
Female	25.8	3.3	153
Male	74.2	3.3	377
Ethnicity/race			
White (non-Hispanic)	72.5	3.4	380
Black (non-Hispanic)	20.4	3.1	107
Hispanic	4.7	1.6	21
Other	2.5	1.2	16
High school completion status			
Graduate	61.6	3.7	330
Dropout/expelled	30.5	3.5	108
Aged out	7.9	2.1	87
Age in 1987			
15-16	2.8	1.2	11
17-18	25.4	3.3	92
19-20	56.1	3.7	241
21-22	13.9	2.6	165
23-24	1.8	1.0	21

Note: Estimates are based on members of the exiter sample who had been out of school continuously at least 2 years as of the 1989 survey date.

Trends in Employment Rates

To establish a baseline, Figure 1 reports rates of competitive paid employment as of the date of the 1987 interview, when all those in the exiter sample had been out of secondary school from a few months up to 2 years. Overall, just over half (52%) were employed, but the rates of employment vary considerably across the disability categories. About 62% of those categorized as learning disabled were employed, for example—a significantly higher rate than for those classified as mildly or moderately mentally retarded (35%, $p < .01$) or seriously emotionally disturbed (46%, $p < .10$).*



Notes: Employment rates are as of the 1987 survey, when youth had been out of secondary school at least 1 month and no more than 2 years, and are weighted estimates. "All conditions" includes a small number of youth in disability categories not shown separately.

FIGURE 1 COMPETITIVE PAID EMPLOYMENT AS OF THE 1987 SURVEY BY DISABILITY CATEGORY

* Because estimates in this report are weighted to generalize to the appropriate universe of youth in the United States employment rates or other descriptive statistics *aggregated across disability categories* represent averages of the estimates of the separate disability categories, with each category weighted by its proportionate representation in the relevant population. As Table 1 shows, these proportions are very unequal.

What happens to these youth over the next 2 years? Do employment rates trend upward, stabilize, or stagnate? Do those classified as learning disabled maintain their advantage? To answer these questions, we used data from the 1989 survey to compute rates of competitive paid employment for these same respondents just over 2 years later. Moreover, the sequence of questions in the 1989 survey enables us to estimate their employment status 1 year before their interview, a point approximately equidistant in time between the 1987 and 1989 surveys. Thus, we can estimate the employment status of each member of the exiter sample at three points in time, at approximately 1-year intervals.

Figure 2 shows these trends. The results are dramatic and important. Overall, these youth realized a steady and steep rise in employment rates over this 2-year period, from about 52% as of the 1987 survey to over 67% 2 years later ($p < .01$). Regardless of their specific *levels* of employment, *gains* were pronounced for those classified as learning disabled, mildly or moderately mentally retarded, and speech impaired. Moreover, the 1989 employment rates of youth with learning disabilities or speech impairments are comparable to those recorded for youth in the general population who are out of school and about these ages (Marder and D'Amico, 1991).

Doubtless, the improved labor market conditions in the United States overall during these years helped. For example, the national unemployment rate for persons aged 20 to 24 fell from 9.7% in 1987 to 8.6% 2 years later. But, regardless of the cause, the gains realized by youth with disabilities during this period are impressive.

Of course, tracking trends over time using the results from two or more surveys must always proceed cautiously, because potential noncomparabilities in the surveys can give a misleading appearance of change when none may have occurred. One noncomparability in the NLTS derives from the fact that parents were the source of information for the first measurement point, while youth were the reporters of the data in 65% of cases in the exiter survey, from which the employment rates for the final two time points were estimated. Research conducted for youth in the general population demonstrates that parents tend to underreport the employment activities of their teenage children (Freeman and Medoff, 1982). Therefore, the 1987 employment rates may be somewhat biased downward, leading to an exaggerated upward sweep to the trend lines. Nonetheless, even the reports for the last two periods, for which youth were usually the source, show evidence of an upward trend for three of the four disability categories, suggesting that real and substantial improvement occurred in the employment rates of these youth as they aged.

This encouraging news must be tempered by two further observations, however. First, despite the dramatic gains recorded by those classified as mentally retarded, their employment rates still barely exceeded 55% by the time they were 3 to 4 years out of school. Second, the employment experiences of those classified as seriously emotionally disturbed stand out as clearly different. Youth in this category recorded only very modest gains over the course of the first year and none over the second year. In short, at none of the discrete time points covered by either survey did their employment rate exceed 50%, and their situation does not appear to be improving.

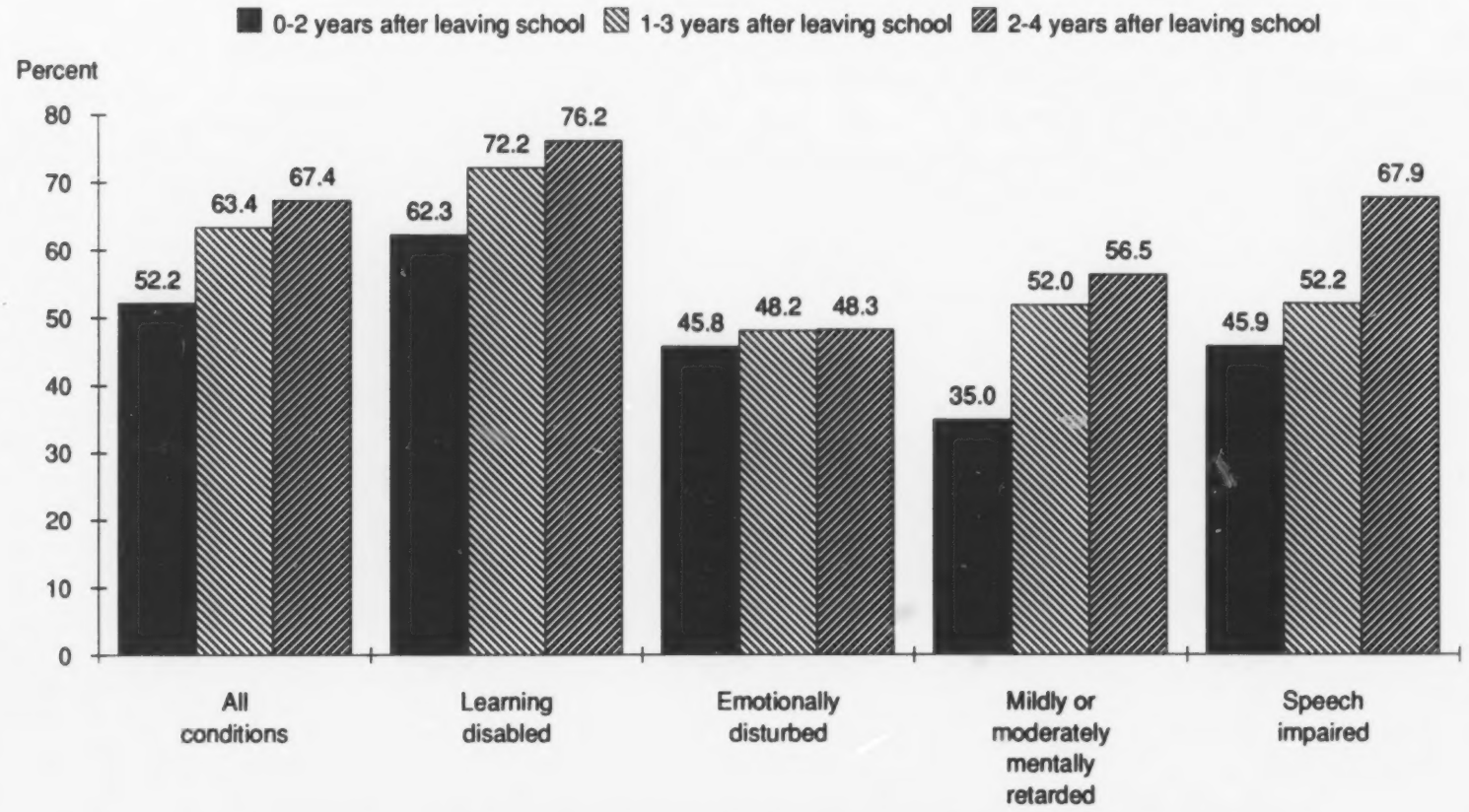


FIGURE 2 EMPLOYMENT RATES AT THREE TIME POINTS (1987, 1988, 1989) FOR EXITERS, BY DISABILITY CATEGORY

Patterns of Employment

The *pattern* in employment rates over these years provides insight into the dynamism of employment experiences by capturing something about the movement of these youth into and out of jobs over time. Table 2 describes these patterns by presenting the percentages of exiters who were employed at various combinations of the 1987, 1988, and 1989 measurement points. This table shows that a substantial number—19% overall—were employed at none of the three time points, while about twice as many (38%) were employed at all three time points. Also, as we would expect given the trend described in Figure 2, many more youth found jobs than left them. For example, 23% of the youth were employed in 1989 but not in 1987, and only 8% were employed in 1987 but not in 1989. Thus, once a youth reported being employed, he or she was very likely to be employed at the subsequent measurement points.*

Table 2

PATTERNS OF EMPLOYMENT BY DISABILITY CATEGORY

	All Conditions	Learning Disabled	Emotionally Disturbed	Mentally Retarded	Speech Impaired
Stable, not employed [pattern 000]	18.5% (3.0)	10.8% (3.6)	28.4% (7.5)	29.8% (5.0)	19.7% (8.6)
Left employment [patterns 100 and 110]	7.7 (2.0)	5.9 (2.7)	16.3 (6.2)	7.8 (2.9)	11.7 (7.0)
Unstable [patterns 101 and 010]	12.2 (2.5)	12.9 (3.8)	12.7 (5.6)	10.9 (3.4)	7.8 (5.8)
Found employment [patterns 001 and 011]	23.3 (3.2)	20.9 (4.7)	18.7 (6.5)	29.3 (5.0)	33.8 (10.3)
Stable, employed [pattern 111]	38.4 (3.7)	49.5 (5.7)	24.0 (7.1)	22.2 (4.5)	27.1 (9.7)
N	514	192	92	170	49

Notes: Numbers are percents with standard errors in parentheses. The patterns of employment are identified in the bracketed expressions. A '0' denotes the youth was not employed and a '1' denotes employment. The first digit of the 3-digit number represents employment status as of the 1987 interview date, the second digit as of the fall of 1988, and the third digit as of the 1989 interview date. Thus, 000 denotes youth not employed at any of these time points, 100 denotes youth employed on the 1987 interview date but not 1988 or 1989, and so on.

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* Of course, this is not to gainsay that there could be any amount of movement into and out of jobs *between* measurement points. Thus, those with pattern 111 need not have been steadily employed over time. In actuality, they could have changed jobs any number of times over these years and/or suffered long or periodic spells of joblessness, so long as they were employed at the three measurement points covered by the surveys. On average, however, those with pattern 111 probably were employed more often than others and suffered less job turnover and/or shorter bouts of joblessness between jobs.

Important differences across the disability categories are in evidence, however. Those classified as learning disabled appear to have the greatest success in getting jobs, for example, with 50% employed at all three time points, significantly more than those in the remaining disability classifications, among whom only about one-quarter were employed at all three time points ($p < .05$). Encouragingly, as with the learning disabled, about three times as many youth classified as mildly or moderately mentally retarded or speech impaired found jobs as left them, which accounts for the upward trend in employment rates over time for these groups. By contrast, those classified as emotionally disturbed left employment about as often as they found it; just over 16% of them had a job in 1987 but not in 1989 (a rate that is substantially larger than that recorded by most other groups), and just under 19% had a job in 1989 but not in 1987.

The pattern of employment over these years as measured in Table 2 is defined by whether the youth was employed at each of three discrete time points. The exiter survey also asked whether the youth had been employed *at any time* since leaving secondary school, and these results are displayed in Table 3. About 9 out of 10 youth classified as learning disabled were employed sometime in the several years after they left secondary school, as were slightly more than 8 out of 10 of the youth in the remaining 3 disability categories.

Table 3

PERCENT EVER EMPLOYED AND EMPLOYED AS OF THE 1989 INTERVIEW DATE

	All Conditions	Learning Disabled	Emotionally Disturbed	Mentally Retarded	Speech Impaired
Percent **ever** employed since leaving secondary school	87.9 (2.5)	91.9 (3.1)	80.1 (6.8)	82.7 (4.1)	82.0 (8.3)
Employed ever, but not at 1989 interview	19.7 (3.0)	15.6 (4.1)	28.2 (7.7)	25.8 (4.7)	9.1 (6.4)
Employed at 1989 interview	68.1 (3.6)	76.2 (4.8)	51.9 (8.5)	56.9 (5.4)	72.9 (9.9)
Percent **never** employed since leaving secondary school	12.1 (2.5)	8.1 (3.1)	19.9 (6.8)	17.3 (4.1)	18.0 (8.5)
N	518	198	89	173	47

Notes: Numbers are percents, with standard errors in parentheses. The preceding table measured employment status at each of three discrete time points. In contrast, the percent ever employed, in this table, denotes those who were employed **at any time** (continuous time) since they left secondary school to the date of the 1989 interview. The percentages employed at the 1989 interview date shown in this table differ somewhat from those shown in Figure 2 because of missing data on the percent ever employed.

A comparison between the percentages currently employed (i.e., as of the 1989 interview) and the percentages ever employed also tells us something about the stability of employment over time. The difference between these rates represents youth who once had a job but either lost it or quit without finding employment elsewhere. Reaffirming the results presented in the preceding table, those classified as learning disabled or speech impaired who ever had a job overwhelmingly also had one at the time of the 1989 interview. Generally, therefore, youth in these categories exhibit fairly stable employment relationships or, at least, if they left one job they found a new one quickly. Among those classified as seriously emotionally disturbed or mildly or moderately mentally retarded, however, matters are rather different. For those classified as seriously emotionally disturbed, for example, over 35% of those ever employed since leaving school were no longer employed at the time of the 1989 survey (i.e., 28.2/80.1, from Table 3). For those classified as mildly or moderately mentally retarded, the comparable figure is 31%. These results suggest that there was much more job turnover and/or longer spells of joblessness among youth in these groups.

Reasons for Joblessness

The exiter survey helps shed light on the reasons for employment instability by having asked youth who were not employed as of the interview date but who were employed at some time since leaving secondary school the reason they left their previous job. These results are displayed in Table 4. Unfortunately, cell sizes are too small to show results separately for each of the disability categories. Overall, however, only about 14% volunteered that they were fired, suggesting (if these results can be accepted at face value) that employer dissatisfaction was not generally a direct cause of job loss. Reasons often unrelated to job performance and beyond an employee's explained employment separation in many cases, with 30% indicating they were laid off and another 18% indicating they were in a temporary job that ended. On the other hand, 37% of youth quit their last job, for whatever reason.

Table 4

REASONS YOUTH LEFT THEIR LAST JOB

	Percent	Standard Error
Quit	37.4	8.4
Was fired	14.3	6.1
Was laid off	29.9	7.9
Temporary job ended	18.4	6.7
N	85	

Note: The sample is restricted to those who were employed at some time since leaving secondary school but were not employed as of the 1989 interview date.

The exiter survey also asked those not currently working (regardless of whether they ever were employed) whether they were looking for work and, if not, why. Table 5 shows that just over one-half of those not working in 1989 were looking for work and thus would be officially listed as unemployed. Of those not looking, 18% were so-called discouraged workers, persons who were not searching because they believed they could not find work. The unemployed and discouraged workers—presumably both able and willing to work—thus jointly constitute about 60% of those not working in 1989. Among others not employed and not looking for work, over 40% did not want a job, 15% believed they were not able to work, 12% were incarcerated, 10% had parents who were against their working, 3% feared they would lose benefits, and 21% cited miscellaneous other reasons.

Table 5

PERCENT LOOKING FOR WORK AND REASONS FOR NOT LOOKING

	Percent	Standard Error
Looking for work	51.5	6.6
N	166	
Reasons for not looking:		
Can't find a job (e.g., too hard to look, no job available)	17.8	6.4
Don't want to work (e.g., raising a family)	40.2	8.2
Not able to work	15.5	6.0
Parents against it	10.1	5.0
Would lose benefits	2.8	2.7
In jail	11.9	5.4
Other	20.6	6.8
N	92	

Note: Whether the youth was looking for work was asked of all those not employed as of the 1989 interview (regardless of whether they had ever been employed in the past). Reasons for not looking were asked of those who indicated they were not looking for work. Youth could cite multiple reasons.

Characteristics of Youth with Steady Employment

What were the characteristics of youth who had fairly regular employment over these years compared with those who were never employed? How do they compare with those who had less regular employment patterns? Table 6 addresses this issue by showing the disability classification, educational achievement, gender, and length of time since leaving secondary school for two categories of youth: those regularly employed (i.e., those with pattern 111 in Table 2) and those who were never employed since leaving secondary school.

A look at the disability classifications of these youth shows that those classified as learning disabled are overrepresented among those who were regularly employed ($p < .01$), while those classified as mentally retarded are overrepresented among those who were never employed ($p < .05$). In contrast to those regularly employed, those never employed are much more likely to have dropped out of high school and to be female ($p < .01$). Differences between groups in the length of time since the youth left school are not statistically significant.

Job Characteristics in 1987 Among Those Employed

Overall, the results of a previous section suggest that youth classified as learning disabled, speech impaired, or mildly or moderately mentally retarded realized steep increases in their employment rates over the few years after they left secondary school. But, among those employed, what kinds of jobs did they hold? More importantly, were they realizing occupational and wage advancement over the several years spanned by the 1987 and 1989 surveys?

We begin the investigation of these questions by showing, in Table 7, the hours worked per week, occupations, and wages for members of the exiter sample who were employed in 1987, at the time of the parent interview. As others have found (e.g., Hasazi et al., 1985), part-time work is quite common. Indeed, from about one-third (for those classified as learning disabled) to 50% (for the seriously emotionally disturbed) of those competitively employed were working fewer than 35 hours per week. Of these, substantial numbers worked 20 or fewer hours per week, especially among youth classified as seriously emotionally disturbed. Being employed, whether full- or part-time, in itself may be important because it demonstrates that a youth is able to establish a toehold in the labor market. On the other hand, part-time workers often have only limited prospects for advancement and may be denied access to important fringe benefits, such as health insurance.

Table 6

CHARACTERISTICS OF YOUTH WITH VARIOUS PATTERNS OF EMPLOYMENT

	All Youth	Regularly Employed	Never Employed
Percentage of youth with primary disability category:			
Learning disabled	60.9	75.4	40.1
	(3.9)	(5.4)	(11.3)
Emotionally disturbed	10.3	6.7	16.1
	(2.4)	(3.1)	(8.5)
Mildly or moderately mentally retarded	27.2	16.8	41.4
	(3.5)	(4.7)	(11.4)
Speech impaired	1.5	1.0	1.9
	(1.0)	(1.3)	(3.2)
Other	.1	.1	.4
	(.3)	(.3)	(1.4)
Percentage of youth who were:			
High school graduates	61.7	69.5	26.1
	(3.9)	(5.8)	(10.5)
High school dropouts	30.9	24.7	54.5
	(3.7)	(5.4)	(11.9)
Age outs	7.4	5.8	19.4
	(2.1)	(2.9)	(9.5)
Percentage of youth who were:			
Male	75.3	85.5	49.6
	(3.4)	(4.4)	(11.6)
Female	24.7	14.5	50.4
	(3.4)	(4.4)	(11.6)
Percentage of youth who, as of 1987, had left secondary school:			
Less than 1 year earlier	52.1	50.2	39.2
	(4.0)	(6.3)	(11.3)
1 to 2 years earlier	47.9	49.8	60.8
	(4.0)	(6.3)	(11.3)
N	481	186	66

Notes: Figures are column percents with standard errors in parentheses. Those in the column "Regularly Employed" are those with pattern 111, as identified in Table 2. Those "Never Employed" are those who had been employed at no time since leaving secondary school, as defined in Table 3. The "All Youth" column includes these two groups as well as those ever employed since leaving school, but with other patterns of employment.

Table 7

CHARACTERISTICS OF JOBS HELD AS OF THE 1987 SURVEY

	All Conditions	Learning Disabled	Emotionally Disturbed	Mentally Retarded
Percentage of employed youth working:				
1 - 20 hours	20.3	16.2	35.0	28.1
	(4.4)	(5.2)	(11.2)	(8.9)
21 - 34 hours	18.6	19.7	16.9	13.7
	(4.2)	(5.6)	(8.8)	(6.8)
35 or more hours	61.1	64.1	48.1	58.2
	(5.6)	(6.8)	(11.7)	(9.7)
Percentage of employed youth working as:				
Professional, managerial, and sales workers	1.5	1.6	0.2	2.1
	(1.3)	(1.7)	(1.0)	(2.8)
Clerical workers (e.g., stock clerk, secretary)	11.4	10.0	19.9	12.4
	(3.4)	(4.2)	(9.1)	(6.4)
Crafts workers (e.g., mechanics, apprentices)	15.5	19.6	9.3	4.4
	(3.8)	(5.5)	(6.6)	(4.0)
Operatives (e.g., packers, service station attendants)	11.8	8.9	13.9	21.2
	(3.4)	(3.9)	(7.9)	(7.9)
Laborers (e.g., grounds keepers)	24.9	26.0	23.1	20.0
	(4.6)	(6.1)	(9.6)	(7.8)
Service workers (e.g., janitors, food service)	35.0	33.9	33.5	40.0
	(5.0)	(6.6)	(10.7)	(9.5)
Percentage of employed youth earning:†				
Less than the minimum wage	12.0	11.2	12.7	14.2
	(3.7)	(4.7)	(8.3)	(7.1)
Minimum wage	23.6	16.4	47.8	38.4
	(4.9)	(5.5)	(12.5)	(9.9)
Above minimum to $5.00	41.2	45.3	27.8	33.4
	(5.6)	(7.4)	(11.2)	(9.6)
$5.01 to $7.50	16.8	20.4	4.9	8.8
	(4.3)	(6.0)	(5.4)	(5.7)
Above $7.50	6.4	6.7	6.8	5.3
	(2.8)	(3.7)	(6.3)	(4.5)
N	255	125	49	56

Note: Tabulations are restricted to those who were employed as of the 1987 survey. Numbers in parentheses are standard errors, with the unweighted sample size shown in the final row. Job characteristics for the speech impaired are not shown separately because of small cell sizes, but results for the "All Conditions" column include them, as well as the small number of youth in other categories.

† Respondents were given the option of reporting earnings per hour, per week, per month, or per year. All responses were converted to an hourly wage metric using information the respondent provided on usual hours worked per week. To allow for imprecision in these conversions, the bottom category, "less than the minimum wage," includes those whose estimated hourly wage was $3.25 or less, while those in the "minimum wage" category earned $3.26 to $3.51. The federal minimum wage in 1987 was $3.35.

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Apart from the hours worked per week, other job characteristics also can foreshadow opportunities for career advancement. Certain occupations, for example, are known to impart greater job security, provide stepping stones for promotion, and so on. The middle panel of Table 7 shows the types of occupations held by employed youth as of the 1987 interview.

As we might expect for youth who had recently left secondary school and had no postsecondary training, very few were employed in professional, managerial, or sales positions. Somewhat more were employed in clerical jobs or as operatives or craft workers. Generally, however, youth tended to be concentrated in unskilled blue-collar jobs (i.e., laborers) and in service occupations, which generally offer minimal prospects for large wage gains or meaningful career advancement.

There is some limited variation in this finding across the disability categories. For example, 20% of those classified as learning disabled were in craft occupations, twice as many as for any other group. In general, however, differences across the disability categories are modest or fail to attain statistical significance.

Finally, in the bottom panel of the table, we consider the wages these youth earned—another job characteristic of central importance in their young lives. Previous research has suggested that persons with disabilities often are paid poverty-level wages (e.g., Siegel, 1987), and the NLTS confirms this. Low earnings were quite common, with one-third overall and over 50% of those classified as seriously emotionally disturbed or mentally retarded earning the 1987 federal minimum wage or less. In each disability category, a substantial percentage earned above the minimum wage to $5.00 per hour, but, except for those classified as learning disabled, the hourly wage distribution tapers off quickly at the higher end of the wage scale. For example, among those classified as learning disabled, 20% earned $5.01 to $7.50, but only 5% of those classified as seriously emotionally disturbed earned this much. Finally, no more than 7% of the youth in any category, including the learning disabled, were earning more than $7.50 per hour.

Trends in Job Characteristics Among Those Employed

The picture presented in the preceding section suggests that, if they worked at all, youth with disabilities often worked only part-time and in low-skill jobs for low wages. As disheartening as this evidence appears, we must bear in mind that these youth had been out of school only a short time when their parents were interviewed in 1987. Moreover, noncollege youth in the general population did not fare much better during this period (Marder and D'Amico, 1991), reminding us that the transition to employment is difficult even for youth in the general population and that the establishment of well-paying careers proceeds only gradually.

This observation brings home the importance of examining the evolution of careers for youth with disabilities as they age. We have already seen that employment rates for youth in most categories moved steadily upward over just 2 years. Do job characteristics also show a steady move toward full-time work, more desirable occupations, and higher hourly wages? Do youth classified as seriously emotionally disturbed stand out as stagnating in their employment experiences, as was the case with the trend in their employment rates? Answers to these questions can do much to improve our understanding of the transition experiences of youth with disabilities.

The clearest way of addressing these issues is by comparing the characteristics of jobs held on the 1987 and 1989 survey dates *for those employed at both points in time.* In this way, potential changes due to compositional effects (i.e., who is included in the tabulations in 1987 vs. 1989) are eliminated, and differences in the characteristics of jobs held in the two time periods truly represent changes in the experiences of the same youth as they age.

Table 8 reports the results of this comparison for hours worked, occupations, and wages. *Along all three dimensions, youth on average show evidence of advancement toward steadier and more attractive employment.* Starting with a comparison of hours worked per week, reported in the top panel of the table, note the pronounced movement toward a full-time work week for those in all categories except mentally retarded. Overall, for example, 34% were employed part-time as of the 1987 survey, but about 2 years later fewer than 10% of these same youth were employed part-time ($p < .01$). Many youth moved into work weeks that exceeded 44 hours per week ($p < .01$).*

With respect to the occupations held, the overall proportion employed in service or laborer occupations declined in favor of other types of jobs ($p < .05$). Although many youth still were employed in occupations that make up the bottom rungs of the occupational hierarchy, the direction of movement was decidedly upward. Although small cell sizes make inferences for those in each of the disability categories hazardous, those in all groups (except perhaps those classified as seriously emotionally disturbed) seemed to exhibit this trend.

Perhaps most encouraging is the apparent advancement in hourly wages. The percentage earning the minimum wage or less declined dramatically for youth in all categories, from 35% in 1987 to 12% 2 years later ($p < .01$). Meanwhile, the percentage earning more than $5.00 per hour more than doubled, from 25% to 54% ($p < .01$). Even youth categorized as mentally retarded, the group with the lowest mean wage in 1987, were earning on average nearly $1 more per hour by 1989.

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* A very small number of youth held two or more jobs simultaneously. Hours worked per week—and other job characteristics—are reported here for the job at which the youth "spends the most time." Thus, hours spent at second or third jobs are not included in these time estimates.

Table 8

JOB CHARACTERISTICS IN 1987 AND 1989 OF YOUTH EMPLOYED AT BOTH TIMES

	1987 Survey				1989 Survey			
	All Conditions	Learning Disabled	Emotionally Disturbed	Mentally Retarded	All Conditions	Learning Disabled	Emotionally Disturbed	Mentally Retarded
Percentage of employed youth working:								
1-20 hours	13.7 (4.2)	13.2 (5.2)	21.4 (10.6)	11.9 (7.0)	2.4 (1.9)	.3 (.8)	2.7 (4.2)	12.0 (7.0)
21-34 hours	20.7 (5.0	20.7 (6.3)	21.9 (10.7)	18.6 (8.4)	7.3 (3.2)	4.1 (3.1)	3.7 (4.9)	23.4 (9.2)
35-44 hours	59.5 (6.0)	60.7 (7.6)	47.6 (12.9)	62.9 (10.5)	61.1 (6.0)	62.2 (7.5)	70.4 (11.8)	51.6 (10.8)
45 or more hours	6.1 (2.9)	5.5 (3.5)	9.1 (7.4)	6.5 (5.4)	29.2 (5.6)	33.4 (7.3)	23.1 (10.9)	13.0 (7.3)
Mean hours worked	34.3	34.4	31.6	34.3	42.0	43.3	41.6	36.1
N	197	102	35	42	197	102	35	42
Percentage of employed youth working as:								
Professional, managerial, or sales workers	1.8 (1.6)	1.8 (2.0)	.3 (1.5)	2.9 (3.6)	4.2 (2.4)	5.0 (3.2)	.8 (2.3)	2.9 (3.6)
Clerical workers	8.6 (3.3)	6.9 (3.8)	15.9 (9.4)	12.8 (7.2)	10.8 (3.7)	10.3 (4.5)	8.5 (7.1)	13.8 (7.5)
Craft workers	18.4 (4.6)	22.2 (6.2)	15.3 (9.2)	3.9 (4.2)	21.8 (4.9)	23.1 (6.3)	24.6 (11.0)	15.0 (7.7)
Operatives	12.1 (3..9)	8.9 (4.3)	22.8 (10.8)	21.2 (8.9)	20.9 (4.8)	20.7 (6.1)	14.6 (9.0)	23.0 (9.1)
Laborers	23.3 (5.0)	25.4 (6.5)	15.5 (9.3)	15.0 (7.7)	15.8 (4.3)	18.4 (5.8)	14.5 (9.0)	5.6 (5.0)
Service workers	35.9 (5.7)	34.8 (7.1)	30.2 (11.8)	44.2 (10.8)	26.4 (5.2)	22.4 (6.2)	37.1 (12.4)	39.8 (10.6)
N	208	107	37	44	208	107	37	44
Percentage of employed youth earning:								
Less than the minimum wage	10.7 (4.2)	12.0 (5.6)	6.7 (7.2)	6.6 (5.7)	4.8 (2.9)	2.8 (2.8)	7.5 (7.6)	12.6 (7.7)
Minimum wage	24.8 (5.9)	16.4 (6.4)	47.6 (14.3)	50.2 (11.6)	6.8 (3.4)	5.5 (3.9)	5.1 (6.3)	13.3 (7.9)
$3.51 to $5.00/hour	39.1 (6.6)	42.1 (8.5)	32.8 (13.5)	29.6 (10.6)	34.8 (6.5)	34.7 (8.2)	49.1 (14.3)	28.4 (10.4)
$5.01 to $7.50/hour	19.8 (5.4)	22.3 (7.2)	8.0 (7.8)	13.6 (7.9)	40.5 (6.7)	41.2 (8.5)	23.3 (12.1)	45.7 (11.5)
$7.51 or more/hour	5.7 (3.1)	7.1 (4.4)	5.0 (6.2)	--	13.0 (4.6)	15.9 (6.3)	15.0 (10.2)	--
Mean hourly wage	$4.48	$4.67	$4.22	$3.82	$5.65	$5.91	$5.33	$4.70
N	164	81	29	37	164	81	29	37

Note: Numbers in parentheses are standard errors.

Importantly, the average wage gain for youth in all categories more than kept pace with the rate of inflation, suggesting that a real increase in earning power occurred. From 1987 to 1989, prices rose about 9%, as measured by changes in the Consumer Price Index. However, the mean wages of youth rose more than 26% overall during this same period, a rate of increase that is nearly triple the rate of inflation. Although a wage of $5.65 still translates into an annual income of less than $12,000 for full-time year-around employment, the rate of wage increase at least offers the hope of better things as youth age.

By the evidence presented here, then, real occupational and wage advancement appears to have occurred over just this 2-year period. Although this news is certainly encouraging, we must be circumspect in noting that the trends shown in Table 8 apply, strictly speaking, only to that subset of youth who were employed during both the 1987 and 1989 survey weeks. This represents less than half of the sample overall, or 56% of those classified as learning disabled, 30% of those classified as seriously emotionally disturbed, 27% of those classified as mildly or moderately mentally retarded, and 34% of those classified as speech impaired.

Are Wage Gains Associated with Work Experience?

As many of us know from our own experiences, continued employment usually is rewarded by periodic wage increases; i.e., the longer we work, the more we earn, even after earnings are adjusted for inflation. Although other explanations have been offered (e.g., see Doeringer and Piore, 1971), the reason for this phenomenon according to standard economic theory is that workers who have worked longer have had time to hone their work skills and, therefore, are more productive, and they are compensated by their employers accordingly (Becker, 1975). Two kinds of work experience have been found to be important: general experience, as measured by the total time one has worked, and tenure, or length of time one has worked for a given employer.

Another way of judging whether youth with disabilities are advancing in the labor market is to see whether they, too, earn higher wages as they accumulate work experience of either of these types. If they do, it would suggest that youth with disabilities are productive workers and that they are receiving wage increases like their peers in the general population. If work experience is not related to their wages, however, it would suggest that, once they find employment, these youth are essentially trapped in dead-end jobs with little prospect for advancement.

The results of the preceding section already have offered some insight into this issue. Specifically, we found that those employed in both 1987 and 1989 earned more in 1989 than they had 2 years earlier. Was it their work experience that paid off? In this section, we examine this issue on a larger sample base by estimating a wage equation using multiple regression analysis. The sample includes all those who were employed at the time of the 1989 survey, and the dependent variable in the equation is the youth's hourly wage, measured at that time. The two key independent variables are, first, a direct measure of tenure available from the 1989 survey, and coded as the number of months for which the

youth worked for his or her current employer. The second key independent variable is a measure of general work experience, defined as the number of points (out of three) at which the youth was employed. The three points are the ones presented earlier in Figure 2 and correspond to the week of the 1987 survey, the week of the 1989 survey, and the week approximately 1 year before the 1989 survey (see the discussion surrounding Figure 2 for details).* If either of these measures is significantly related to wages, we will have strong evidence that youth with disabilities—at least those who find a job—have opportunities for advancement if they maintain steady employment.

To separate the effects of these experiences from other factors with which they may be confounded, we also include in the regression equation additional independent variables, which also can be expected to be related to wages:

- *Gender.* A dichotomous variable for whether the respondent is a male is added to the equation to control for the fact that, at least for youth and adults in the general population, males earn more than females.
- *Minority status.* A dichotomous variable for whether the youth is a member of an economic minority group also was created. It is coded 1 for youth who are black, Hispanic, American Indian, or other; and 0 for non-Hispanic whites and Asians.
- *Head of household's education.* This item, coded on a five-point scale (from 1 = head was a dropout to 5 = head attained a postgraduate degree), controls for the fact that youth from higher-SES families may have higher achievement motivations or may benefit from the better personal contacts of their parents.
- *Months since the youth left secondary school.* Youth could have exited secondary school anywhere from 2 years to just over 4 years prior to the date of the exiter survey.
- *Disability category.* The nature of the youth's disability is expected to be related to labor market outcomes. Accordingly, three dichotomous variables are added to the equation—one coded 1 for youth who were categorized as seriously emotionally disturbed and 0 otherwise, another coded 1 for youth categorized as mentally retarded and 0 otherwise, and the third coded 1 for youth categorized as speech impaired and 0 otherwise. Learning disabled is the omitted reference category.** Thus, coefficients estimated for the disability categories represented by the variables are estimates of the amount by which youth in these categories earned more or less than those who were learning disabled, holding constant other factors in the model.
- *IQ.* This variable is an additional measure of ability and will capture some of the heterogeneity *within* each of the disability categories that previous results using the NLTS data have shown to exist (e.g., Marder and Cox, 1991).

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* Because of the presumed unreliability of respondent recall, the 1989 survey did not elicit information on the total length of time during which each youth was employed (regardless of the employer). The variable we use, which ranges from 1 to 3, serves as a proxy.

** The handful of youth in the exiter sample who were classified as neither learning disabled, emotionally disturbed, mentally retarded, nor speech impaired were omitted from the analysis.

- *High school graduation.* High school graduates are expected to record more favorable labor market outcomes than those who are dropouts or who aged out, other things being equal, due to either credentialism (Berg, 1971) or their enhanced human capital (Becker, 1979).
- *Youth took vocational coursework.* Evidence presented elsewhere (e.g., D'Amico, 1991; Hasazi et al., 1985) suggests that youth with disabilities who took vocational coursework while in secondary school have more favorable postschool labor market outcomes.

Results from the estimation of this model are presented in Table 9, which reports the regression coefficients, standard errors, and standardized regression coefficients. The latter allows us to compare the effects of different variables to see which are relatively more strongly related to the outcome. The R-squared of the model, also shown in Table 9, is .23, suggesting that almost one-quarter of the variance in hourly wages is explained by the independent variables, a figure that is roughly comparable to wage models estimated for youth in the general population (e.g., D'Amico, 1989).

Note from the bottom of the table that the measure of general work experience has a significant and large effect, with the coefficient of .94 suggesting that youth who were employed at all three discrete time periods earned nearly $2 per hour more than those employed only as of the 1989 survey, once the disability category and other factors are controlled. This finding suggests the importance of a steady work history for wage advancement. Thus, youth who were able to point to a more or less continuous record of employment since leaving secondary school were apparently more highly valued by employers and were able to command higher wages. The standardized coefficient of .27 further suggests that steady employment has a larger net effect than any other factor in the model.

On the other hand, tenure has a coefficient indistinguishable from zero, suggesting that the net wage gains associated with work experience with a given firm are nil in this sample, independent of more general work experience. Put differently, youth who had been with their current employers for longer periods of time had no higher wages than did youth who switched employers but who worked the same length of time overall.

Note that males earned about $.68 more than females, and minorities earned $.67 less than whites, once other factors are controlled. Each additional point of measured IQ was worth about 2 cents more per hour in the labor market, but once IQ is controlled, the wages of those classified as seriously emotionally disturbed, mildly or moderately mentally retarded, or speech impaired did not differ significantly from those who were learning disabled (with IQ removed from the model, those classified as mentally retarded earned a significant $1.09 less per hour than those classified as learning disabled). Neither head of household's education, the youth's own level of education, the youth's coursework, nor months since having left school had net significant effects on wages.

Table 9

REGRESSION ANALYSIS OF HOURLY WAGE AS OF THE 1989 SURVEY

	Coefficient	Standard Error	Standardized Coefficient
Intercept	6.2	1.44	--
Background attributes			
IQ	.02*	.01	.16*
Youth is male	.68*	.35	.12*
Youth is minority	.67*	.37	-.12*
Head of household's education	.07	.15	.03
Months since left high school	.01	.02	.02
Disability category (LD is omitted category)			
Youth is emotionally disturbed	-.26	.40	-.04
Youth is mentally retarded	-.69	.45	-.13
Youth is speech impaired	-.32	.51	-.04
Educational experiences			
Youth is a high school graduate	.35	.34	.06
Youth took vocational education classes	-.50	.33	-.10
Employment history			
Tenure (months with current employer)	-.00	.01	-.01
Employed at 1, 2, or 3 points in time	.94***	.23	.27***
R^2	.228		
N	245		

Note: The 245 youth included in this regression are of the 290 youth in these 4 disability categories who were employed and reported an hourly wage in 1989 (the remaining 45 youth had missing data on one or more independent variables). Characteristics of the 245, as they compare to all those in the analyses sample for this chapter, are described in Appendix C.

* Significant at the .10 level.

** Significant at the .05 level.

*** Significant at the .01 level.

In interpreting these results, one important caution is that this equation is estimated for youth who were no more than a few years out of secondary school. Effects not observed here may very well exert themselves over a longer period of time, when the labor market's sorting mechanisms have had some time to operate. For example, it is not unusual to find, for non-college youth in the general population who are employed, that neither high school graduation nor tenure is significantly related to wages in the first years after high school (D'Amico, 1989). For older cohorts, both education and tenure exert powerful effects. By the same token, neither high school graduation nor tenure is a significant determinant of wages in our sample, but both may well become important as these youth age.

Despite the lack of significance of tenure, the results of the regression analysis reaffirm the findings from the results of Table 8 that youth in the several disability classifications covered by the exiter sample who maintained steady employment over these several years realized substantial wage gains. Once again, these youth do appear to be advancing.

Finally, to flesh out the picture from the regression results, Table 10 presents profiles of youth who earned more than $5.00 per hour relative to those who earned less than this amount. Youth classified as learning disabled were overrepresented in the group with the higher earnings, as were males ($p < .05$). Recalling the results from Table 6, these were the same groups overrepresented among those with the most stable employment over these years.

Youths' Perceptions of Their Opportunities

Our examination of the trends in employment rates and job characteristics for the exiter sample has done much to inform our understanding of the labor market experiences of youth with disabilities. But, for a more complete picture, we should not ignore what the youth themselves can tell us about their experiences.

Youth who were employed in 1989 were asked a number of questions relating to their satisfaction with their jobs and their perception of opportunities for advancement. Affirming what others have found (e.g., Mithaug et al., 1985), youth with disabilities express a remarkable degree of satisfaction with the present and optimism for the future. As Table 11 shows, more than 95% felt that they were treated well by their coworkers, and 90% liked their job at least fairly well. A smaller percentage, but still a substantial majority, felt that they were paid well for their work. Reinforcing the positive trends described earlier, nearly 60% liked their current job more than the one they held previously. Finally, 82% felt that they had the opportunity to advance. These findings are remarkably constant across the various disability categories, with none of the differences attaining statistical significance at the .05 level.

Table 10

PROFILES OF HIGH- AND LOW-WAGE WORKERS

	Overall Employed	Earn $5.00 or Less	Earn $5.01 or More
Percentage of youth with primary disability category:			
Learning disabled	67.0	59.6	77.6
	(4.8)	(6.6)	(6.4)
Emotionally disturbed	7.0	7.4	6.6
	(2.6)	(3.5)	(3.8)
Mildly or moderately mentally retarded	24.4	31.5	14.3
	(4.4)	(6.3)	(5.4)
Speech impaired	1.5	1.5	1.4
	(1.2)	(1.6)	(1.8)
Other	.1	.1	.1
	(.3)	(.4)	(.5)
Percentage of youth who were:			
High school graduates	70.6	67.4	75.2
	(4.6)	(6.4)	(6.7)
High school dropouts	22.8	25.2	19.5
	(4.3)	(5.9)	(6.1)
Age outs	6.5	7.4	5.3
	(2.5)	(3.6)	(3.5)
Percentage of youth who were:			
Male	80.4	74.0	89.4
	(4.0)	(5.9)	(4.8)
Female	19.6	26.0	10.6
	(4.0)	(5.9)	(4.8)
Percentage of youth who, as of 1987, had left secondary school:			
Less than 1 year earlier	54.7	54.2	55.2
	(5.1)	(6.7)	(7.7)
1 to 2 years earlier	45.3	45.8	44.8
	(5.1)	(6.7)	(7.7)
N	300	178	122

Note: Figures are column percents with standard errors in parentheses.

Overall, then, youth were well satisfied with their achievements to date and were confident about their opportunities for the future. However, we hasten to add once again that these results pertain solely to youth in these disability categories who were employed on the date of the 1989 survey. The substantial proportion who were not employed almost by definition were faring less well, and their attitudes can be expected to be rather different.

Table 11

JOB SATISFACTION AND PERCEPTIONS OF OPPORTUNITIES OF EMPLOYED YOUTH

	All Conditions	Learning Disabled	Emotionally Disturbed	Mentally Retarded
Are you well paid for your work?†	66.1%	64.8%	62.2%	72.4%
	(5.2)	(6.8)	(11.0)	(8.5)
Are you treated well by others at your job?†	95.1	94.5	94.4	97.7
	(2.4)	(3.3)	(5.2)	(2.9)
Do you like your job?#	89.6	88.2	95.4	92.8
	(3.4)	(4.6)	(4.9)	(4.9)
Do you have chances to work your way up?†	81.5	78.9	91.1	87.0
	(4.4)	(5.9)	(6.5)	(6.5)
N	224	112	42	51
Do you like the job you now have more or less than your last job?††				
More	59.2	59.2	66.6	55.3
	(6.6)	(8.3)	(11.6)	(12.6)
About the same	22.6	22.7	10.0	30.7
	(5.6)	(7.1)	(7.4)	(11.7)
Less	(18.2	18.1	23.4	14.1
	(5.2)	(6.5)	(10.4)	(8.8)
N	157	81	35	29

Note: Respondents who were parents or guardians were not asked these questions. Therefore, the base is youth respondents who were employed as of the 1989 interview. Results for those classified as speech impaired are not shown separately because of small cell size, but the results for the "All Conditions" column include them as well as a small number of those in other disability categories.

† Percent answering yes.

Percent answering "very much" or "fairly well."

†† Further restricted to those who had at least one job prior to their current one since leaving high school.

Summary and Conclusions

In the wake of recent federal legislative initiatives that open new opportunities for persons with disabilities, practitioners and researchers are paying increasing attention to the educational experiences and subsequent early adult attainments of youth leaving special education. As a consequence, a number of recent follow-up studies have begun to report data on the transition experiences of this population. Drawing on the results from the 1987 survey, the NLTS, too, has added to the increasing volume of this literature.

Given the dearth of systematic analyses of this population heretofore, these studies are of obvious importance. Nonetheless, a central contention of this paper is that single, point-in-time snapshots are often inadequate for truly understanding how these youth fare and how their experiences compare with those in the general population. For noncollege youth in the general population, the first few years after they leave high school are often chaotic and marked by frequent job hopping and periodic spells of joblessness. Only gradually, as youth learn about new labor market opportunities and develop their own work skills and define their interests, do their employment relationships stabilize and careers take hold. Although a cross-sectional picture of the early employment experiences of youth in the general population might show high rates of joblessness and employment at low wages, it is the trend toward steady and well-paying work that ultimately defines their transition as being successful.

In like fashion, we have argued, it is essential to observe and document the trend in the early labor market experiences of youth with disabilities. This paper has made a start at such an enterprise by reporting the trend over 2 years in employment rates and job characteristics for a sample who were classified as learning disabled, seriously emotionally disturbed, mildly or moderately mentally retarded, or speech impaired. Results presented in this document show that youth in all categories except seriously emotionally disturbed realized steep gains in employment rates over this period. From an employment rate of just over 50% overall as of the 1987 survey, more than 67% were employed just over 2 years later. This sizable increase suggests that substantial numbers found their first jobs or reduced their job turnover during this 2-year period.

We further showed that, among youth employed during this period, substantial wage and occupational advancement took place. The work week stabilized toward full-time employment, movement up the occupational hierarchy occurred, and hourly wages improved dramatically. The significant and large effect of work experience on hourly wages suggests that this wage advancement comes with increasing work experience. Moreover, the youth themselves overwhelmingly evince satisfaction with their jobs and perceive the opportunity for their further advancement.

In the midst of this good news, several more discouraging findings stand out. Many youth, especially among those classified as seriously emotionally disturbed or mildly or moderately mentally retarded, were not employed as of the 1989 survey. Indeed, substantial numbers had

never been employed since leaving school. Although some of this joblessness represents youth who chose not to work in favor of family or other responsibilities, many others were simply unable to make a transition to steady employment during this several-year period. Moreover, possible "scarring effects" caused by their early prolonged joblessness may reduce their prospects for subsequent employment success.

Although it seems paradoxical, there is a sense, too, in which the steep rise in employment rates from 1987 to 1989 observed for most groups suggests that the school-to-work transition process for youth in special education is flawed. Youth categorized as learning disabled, for example, attained 1989 employment rates that were comparable to those of their counterparts in the general population only because their employment rate increased by 15 percentage points in the several years after they left school. Thus, whereas the mid-life attainments of persons who are learning disabled are reasonably good (e.g., Horn et al., 1983), apparently these attainments do not come about easily. Implicitly, therefore, youth with disabilities are playing catch-up. The recent legislative mandate that all students in special education have written transition plans acknowledges that many of the "bridges" between school and work needed to ensure a smooth transition have yet to be built.

Finally, we must not lose sight of the youth in the seven disability categories not represented by the exiter sample, whose 1987 employment rates in some cases barely exceeded 10% (D'Amico, 1989). We can only wonder how the employment experiences of these youth are progressing. Analyses forthcoming from the NLTS will focus on their experiences.

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Appendix A

OVERVIEW OF THE NATIONAL LONGITUDINAL TRANSITION STUDY OF SPECIAL EDUCATION STUDENTS

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OVERVIEW OF THE NATIONAL LONGITUDINAL TRANSITION STUDY OF SPECIAL EDUCATION STUDENTS

As part of the 1983 amendments to the Education of All Handicapped Children Act (EHA), the Congress requested that the U.S. Department of Education conduct a national longitudinal study of the transition of secondary special education students to determine how they fare in terms of education, employment, and independent living. A 5-year study was mandated, which was to include youth from ages 13 to 21 who were in special education at the time they were selected and who represented all 11 federal disability categories.

In 1984, the Office of Special Education Programs (OSEP) of the U.S. Department of Education contracted with SRI International to determine a design, develop and field test data collection instruments, and select a study sample. In April 1987, under a separate contract to OSEP, with supplemental funding from the Rehabilitation Services Administration, SRI began the National Longitudinal Transition Study of Special Education Students (NLTS).

In the field of research on youth with disabilities, the NLTS is unique in several respects. For many years, the research base on youth with disabilities has consisted largely of studies of relatively few youth who were in particular disability categories, in a few school districts or a single state, or in a specific educational placement or treatment program. It has been very difficult to paint a broad picture of students from this fragmented research base. With the NLTS, findings are based on a large and nationally representative sample. The data presented here were collected in 1987 for a sample of more than 8,000 youth representing the national population of secondary special education students who were ages 13 to 21 in the 1985-86 school year. The sample permits us to estimate with fairly high precision many of the characteristics of youth with disabilities and their experiences in adolescence and early adulthood. Further, the sample is nationally representative of 1985-86 secondary special education students, both as a whole and for those in each of the 11 federal disability categories separately. Therefore, for the first time we know what the transition experiences were for youth with mental retardation, for example, and how they differed from those of youth with orthopedic impairments or multiple handicaps.

The NLTS is also unusual in its longitudinal design. The students for whom data were gathered in 1987 are being retained in the study, and follow-up data were collected about them in 1990. These follow-up data will enable the estimation of trends in experiences as youth age. For example, we will be able to describe the movement in and out of jobs and in and out of school that often characterizes youth in their early adult years.

Finally, the NLTS is extremely broad in scope, gathering information on a wide range of characteristics, experiences, and outcomes of youth with disabilities, including the following:

- Individual and family characteristics (e.g., demographics, disability-related characteristics).
- Independent functioning (e.g., residential independence, financial independence, functional abilities).
- Social experiences (e.g., belonging to school or community groups, socializing with friends).
- School programs (e.g., courses taken, support services provided, educational placements).
- School characteristics and policies (e.g., type of school attended, policies related to mainstreaming, programs available for special education students).
- School achievement and completion (e.g., grades received, absenteeism, dropout/graduation behaviors).
- Employment characteristics (e.g., rates of employment, job types and duration, wages).
- Postsecondary education participation in vocational schools and 2-year and 4-year colleges.
- Services provided by the school and other sources (e.g., job training, physical therapy, counseling).
- Parental expectations for youth in the areas of education, employment, and independence.

This breadth of scope provides the most comprehensive picture yet available of youth with disabilities during adolescence and early adulthood.

Study Components

The NLTS has four major components:

- *The parent/guardian survey.* In the summer and fall of 1987, parents were interviewed by telephone to determine information on family background and expectations for the youth in the sample, characteristics of the youth, experiences with special services, and the youths' educational attainments (including postsecondary education), employment experiences, and measures of social integration. Parents rather than youth were selected as respondents for the first wave of data collection because of the need for family background information and because, with most students still being in secondary school and living at home, parents were believed to be accurate respondents for the issues addressed. A follow-up survey was conducted in the fall of 1990, when youth were interviewed if they were able to respond.
- *School record abstracts.* Information has been abstracted from students' school records for their most recent year in secondary school (the 1985-86 or 1986-87 school year). This information relates to courses taken, grades achieved (if in a graded program), placement, related services received from the school, status at the end of the year, attendance, IQ, and experiences with minimum competency testing.

In spring 1991, secondary school transcripts were sought for all youth who were in secondary school at any time since the 1986-87 school year.

- *Survey of secondary special education programs.* Schools attended by sample students in the 1986-87 school year were surveyed for information on enrollment, staffing, programs and related services offered to secondary special education students, policies affecting special education programs and students, and community resources for the disabled. A similar survey is being conducted in 1991 for youth still in secondary school in the 1990-91 school year.
- *Explanatory substudies.* Studies involving two subsamples of youth have looked in greater depth at (1) students' secondary school programs (the school program substudy), (2) the patterns of transition outcomes achieved by youth who were out of secondary school (the exiter substudy), and (3) the relationship between school experiences and outcomes. Substudies were conducted in 1989 and 1990.

The NLTS Sample

The NLTS sample was constructed in two stages. A sample of 450 school districts was randomly selected from the universe of approximately 14,000 school districts serving secondary (grade 7 or above) special education students,* which had been stratified by region of the country, a measure of district wealth involving the proportion of students in poverty (Orshansky percentile), and student enrollment. Because not enough districts agreed to participate, a replacement sample of 178 additional districts was selected. More than 80 state-supported special schools serving secondary-age deaf, blind, and deaf/blind students were also invited to participate in the study. A total of 303 school districts and 22 special schools agreed to have their students selected for the study.

Analysis of the potential bias of the district sample indicated no systematic bias that would have an impact on study results when participating districts were compared with nonparticipants on several characteristics of the students served, participation in Vocational Rehabilitation programs, the extent of school-based and community resources for the disabled, the configuration of other education agencies serving district students, and metropolitan status (see Javitz and Wagner, 1990, for more information on the district sample). Bias may exist, of course, on factors for which data were not available for such comparisons.

Students were selected from rosters compiled by districts, which were instructed to include all special education students in the 1985-86 school year who were in grades 7 through 12 or whose birthdays were in 1972 or before, whether they were served within the district or outside the district (e.g., in a state-supported residential school). Rosters were stratified into 3 age groups (13 to 15, 16 to 18, over 18) for each of the 11 federal disability categories, and youth

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* The 1983 Quality Education Data, Inc., (QED) database was used to construct the sampling frame. QED is a private nonprofit firm located in Denver, Colorado. Special education cooperatives and other special service units were not sampled directly (83% of special education students are served directly by school districts; Moore et al., 1988). However, instructions to districts for compiling student rosters asked districts to include on their listing any students sent from their district to such cooperatives or special service units. Despite these instructions, some districts may have underreported students served outside the district.

were randomly selected from each age/disability group so that approximately 800 to 1,000 students were selected in each disability category (with the exception of deaf/blind, for which fewer than 100 students were served in the districts and schools included in the sample).

In part because of the time lapse between sample selection and data collection, many students could not be located at the addresses or telephone numbers provided by the schools. Of the 12,833 students selected for the sample, about one-third could not be reached by telephone for the parent interview. (For more than half of these, addresses and telephone numbers were not provided by the schools/districts from which they were sampled.) This relatively high rate of inability to reach sample members confirmed the importance of including in the NLTS a substudy of nonrespondents to determine whether those who were reached for the telephone interview were a representative sample of the population to which the study was intended to generalize. To identify whether bias existed in the interview sample, interviewers went to 28 school districts with relatively high nonresponse rates to locate and interview in person those who could not be reached by telephone. Of the 554 sought for in-person interviews, 442 were found and interviewed, a response rate of 80%. A comparison of telephone interview respondents with in-person interview respondents showed that the telephone sample underrepresented lower-income households. The sample was reweighted to adjust for that bias, as described in the next section.

Of the 10,369 sampled students for whom addresses or telephone numbers were provided by schools or districts, some portion of the needed data was collected for 84%; the response rates for individual components of the study were as follows:

	N	Response Rate
Parent interview	7,619	71%
School records	6,241	60
School survey	6,672	64

Weighting Procedures and the Population to Which Data Generalize

Youth with disabilities for whom data could be gathered were weighted to represent the U.S. population of special education students in the 1985-86 school year who were in grades 7 through 12 or at least 13 years old. Because it consists of students at various ages, the NLTS sample does not generalize to youth who had dropped out of school before that age. For example, the sample of 18-year-olds generalizes to youth who were 18 and still in secondary school in 1985-86, not to all 18-year-olds with disabilities, many of whom may have left school at an earlier age.

In performing sample weighting, three mutually exclusive groups of sample members were distinguished:

(A) Youth whose parents responded to the telephone interview.

(B) Youth whose parents did not respond to the telephone interview but were interviewed in person.

(C) Youth whose parents did not respond to either the telephone or in-person interview but for whom we obtained a record abstract.

A major concern in weighting was to determine whether there was a nonresponse bias and to calculate the weights in such a way as to minimize that bias. There was a potential for three types of nonresponse bias*:

(1) Bias attributable to the inability to locate respondents because they had moved or had nonworking telephone numbers.

(2) Bias attributable to refusal to complete an interview (only 3% of those available to be interviewed refused).

(3) Bias attributable to circumstances that made it infeasible to locate or process a student's record.

Of these three types of nonresponse, the first was believed to be the most important, in terms of both frequency and influence on the analysis. Type 1 bias was also the only type of nonresponse that could be estimated and corrected for.

The magnitude of type 1 nonresponse bias was estimated by comparing responses to items available for the three groups of respondents (after adjusting for differences in the frequency with which youth in different disability categories were selected and differences in the size of the districts selected). Group A was wealthier, more highly educated, and less likely to be minority than group B. In addition, group A was more likely to have students who graduated from high school than group B or C (which had similar dropout rates). Groups A and B were compared on several additional measures for which data were unavailable for group C. The youth described by the two groups were similar on these additional items, including gender, employment status, pay, functional skills, association with a social group, and length of time since leaving school. Adjusting the weights to eliminate bias in the income distribution eliminated bias in parental educational attainment and ethnic composition, but did not affect differences in dropout rates. It was also determined that groups B and C were large enough that if they were treated the same as group A in the weighting process, the resulting dropout distribution would be approximately correct.

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* We assumed that nonrespondents who could not be located because districts did not provide student names would have chosen to participate at about the same rate as parents in districts in which youth could be identified. The remaining nonrespondents presumably would have been distributed among the three types of nonresponse mentioned above.

Weighting was accomplished using the following steps:

- Data from the first two groups of sample members were used to estimate the income distribution for each disability category that would have been obtained in the absence of type 1 nonresponse bias.
- Respondents from all three groups were combined and weighted up to the universe by disability category. Weights were computed within strata used to select the sample (i.e., LEA size and wealth, student disability category and age).
- Weights from three low-incidence disability categories (deaf, orthopedically impaired, and visually impaired) were adjusted to increase the effective sample size. These adjustments consisted primarily of slightly increasing the weights of students in larger LEAs and decreasing the weights of students in smaller LEAs. Responses before and after these weighting adjustments were nearly identical. In addition, because there were only three deaf/blind youth from medium-size or smaller districts, and they had large weights, they were removed from the sample to increase the effective sample size. Thus, NLTS results do not represent the very small number of deaf/blind students in medium-size or smaller LEAs.
- The resulting weights were adjusted so that each disability category exhibited the appropriate income distribution estimated in step 1 above. These adjustments were of modest magnitude (relative to the range of weights within handicapping condition); the weights of the poorest respondents were multiplied by a factor of approximately 1.6, and the weights of the wealthiest respondents were multiplied by a factor of approximately .7.

Estimation of Standard Errors

The statistical tables in this report present data for various subgroups of youth with disabilities. Most of the variables presented in the tables are reported as percentages of youth, which are weighted to represent the national population of youth with disabilities and youth in each disability category. However, the percentages are only estimates of the actual percentages that would be obtained if all youth with disabilities were included in the study. These estimates vary in how closely they approximate the true measures that would be derived from a study of all youth. To aid the reader in determining the precision of the estimates, for each percentage the tables present the approximate standard error and the unweighted number of cases on which the statistic is based.

The standard errors for the NLTS were computed using procedures that differ from standard calculation routines. Such routines assume a simple random sample. However, the NLTS used a stratified cluster sample design, which introduces design effects that reduce the precision of estimates for a sample of a given size, compared with a simple random sample. The design effects within the NLTS affect the precision of estimates to varying degrees for different subpopulations and different variables. Pseudo-replication is widely accepted as a variance estimation technique in the presence of design effects. However, it is not cost-effective for estimating the standard errors of the thousands of variables and subpopulations tabulated in the numerous NLTS reports and its statistical almanacs. Therefore, pseudo-

replication was conducted on a limited number of variables to calibrate a cost-effective approximation formula, using the following procedures:

- A set of 25 variables representing the parent interview, school program survey, and record abstract were identified for the purpose of developing a statistical approximation formula; these included 16 nominal variables and 9 continuous variables.
- Standard errors of the weighted means of the selected variables were estimated in two ways. The first procedure involved pseudo-replication. For each variable, standard errors were calculated for students in each handicap category and for the total sample (300 standard errors) using a partially balanced experimental design specifying how students were to be allocated to 16 half-samples. The sample was split on the basis of the school districts and special schools from which youth were originally sampled. Districts and schools were paired on the basis of enrollment and a measure of poverty, and one member of each pair was assigned to each half-sample. Sample weights for students were computed for each half-sample as if those in the half-sample were the only study participants.

  The following formula was used to estimate the standard error of the mean for students in all conditions:

  $$\text{Standard error} = [(1/16)\ \Sigma_i\ (M_i - M)^2]^{1/2}$$

  where M_i is the mean calculated for students in one of the 16 half-samples), M is the mean response calculated from the full sample, and the summation extends over all 16 half-samples. (Note that responses to questions from the school program survey were attached to the records of students in the responding schools so that means for these items were computed using student weights.)

- The second estimation procedure involved an approximation formula based on an estimate of the effective sample size for each disability category and the total sample. The sampling efficiency (E) for a group was calculated using the following formula:

  $$E = M_W^2/(M_W^2+S_W^2)$$

  where M_W and S_W are the mean and standard deviation of the student weights over all members of the group. The approximation formula for the standard error of the weighted mean of nominal variables is:

  $$\text{Standard error} = [P(1-P)/(E \times N)]^{1/2}$$

  where P is the full-sample weighted proportion of "yes" responses to a particular question in the group, N is the unweighted number of "yes" or "no" responses to the question in the group, and E is the sampling efficiency of the group. The approximation formula for the standard error of the mean of a continuous variable is:

  $$\text{Standard error} = [S^2/(N \times E)]^{1/2}$$

  where S^2 is the variance of responses in the group for the continuous variable (computed with frequencies equal to full-sample weights) and N is the unweighted number of respondents to the question in the group. These formulas were used to compute a total of 300 standard errors for the same variables and groups addressed using pseudo-replication.

- To assess the accuracy of the standard errors produced by these formulas, we used scatter plots to compare them with standard errors produced using pseudo-replication. For both nominal and continuous variables, the approximate best fit was a 45-degree line. That is, on average, the formula based on estimates of effective sample size neither systematically overestimated nor underestimated the standard error obtained using pseudo-replication, arguing for use of the more cost-effective estimation formulas. However, because error remains in the estimates that might result in underestimating the true standard errors in some instances, we took a conservative approach and multiplied the standard errors produced using the estimation formulas by 1.25. The vast majority of the standard errors so obtained were larger than the standard errors obtained by pseudo-replication. Thus, the standard errors were calculated using the effective sample size estimation formulas and increased by a factor of 1.25.

References

Javitz, H., and Wagner, M. (1990). *National Longitudinal Transition Study of Special Education Students: Report on sample design and limitations, wave 1 (1987).* Menlo Park, CA: SRI International.

Moore, M., et al. (1988). *Patterns in special education service delivery and cost.* Washington, DC: Decision Resources Corp.

Appendix B

OTHER PRODUCTS AVAILABLE FROM THE NLTS

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The National Longitudinal Transition Study of Special Education Students Statistical Almanacs:

- Volume 1: Overview
- Volume 2: Youth Categorized as Learning Disabled
- Volume 3: Youth Categorized as Emotionally Disturbed
- Volume 4: Youth Categorized as Speech Impaired
- Volume 5: Youth Categorized as Mentally Retarded
- Volume 6: Youth Categorized as Visually Impaired
- Volume 7: Youth Categorized as Hearing Impaired
- Volume 8: Youth Categorized as Orthopedically Impaired
- Volume 9: Youth Categorized as Other Health Impaired
- Volume 10: Youth Categorized as Multiply Handicapped

The National Longitudinal Transition Study of Special Education Students: Report on Sample Design and Limitations, Wave 1 (1987)

The National Longitudinal Transition Study of Special Education Students: Data Tape and Documentation

Parents' Reports of Students' Involvement with Vocational Rehabilitation Agencies in the First Years After Secondary School: A Report from the National Longitudinal Study of Special Education Students

The Transition Experiences of Youth with Disabilities: A Report from the National Longitudinal Study of Special Education Students

Dropouts with Disabilities: What Do We Know? What Can We Do?

Youth With Disabilities: How Are They Doing? The First Comprehensive Report from the National Longitudinal Transition Study of Special Education Students

The National Longitudinal Transition Study of Special Education Students: Report on Procedures for the First Wave of Data Collection (1987)

Prices and order information are available upon request. SRI International, National Longitudinal Transiton Study of Special Education Students (NLTS), Building B, Room S128, 333 Ravenswood Avenue, Menlo Park, CA 94025. (415) 859-3403.

Appendix C

A COMPARISON OF THE ANALYSIS SAMPLE WITH OTHERS

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A COMPARISON OF THE ANALYSIS SAMPLE WITH OTHERS

This report represents an effort to describe how youth progress in the labor market in the first few years after they have finished their schooling. Accordingly, the decision was made to restrict the analysis sample to youth in the exiter sample who remained out of school continuously from the parent survey in 1987 to the exiter survey in 1989. Thus, for example, trends in hourly wages will not be confounded by the wage increase that might have been realized by those who obtained a postsecondary diploma or certificate sometime between 1987 and 1989, nor will fluctuations in employment rates be affected by the movement into and out of the labor market of persons who were students for part of this period.

The disadvantage of this universe restriction is that by effectively excluding postsecondary students, the analyses in this report omit from consideration exiter sample members who may be among the most able, at least as measured by academic performance. To impart an understanding of these differences, Table C-1 compares the characteristics of the 530 exiter sample members who remained out of school continuously since 1987 (i.e., this report's analysis sample) with those of the remaining 281 exiters who did attend school during this period. The only significant difference between these groups is that the analysis sample is significantly more likely to include those classified as mildly or moderately mentally retarded ($p < .05$). Employment rates are not significantly different in either 1987 or 1989, and the point estimates are almost identical in 1987.

The final columns of the table report the characteristics of those who were included in the hourly wage regression. By virtue of representing those in the analysis sample who were employed in 1989, these youth show an overrepresentation of those classified as learning disabled, males, non-Hispanic whites, and high school graduates.

Table C-1

DEMOGRAPHIC AND OTHER ATTRIBUTES

	Analysis Sample		Others in Exiter Sample		In Regression (Table 9)	
	Percent	S.E.	Percent	S.E.	Percent	S.E.
Disability category						
Learning disabled	58.6	3.7	69.5	4.6	65.9	5.3
Emotionally disturbed	10.5	2.3	14.5	3.5	8.0	3.0
Mildly or moderately mentally retarded	29.4	3.4	11.9	3.3	24.6	4.8
Speech impaired	1.4	.9	3.7	1.9	1.6	1.4
Other	.1	.1	.4	.6	--	
Gender						
Female	25.8	3.3	30.5	4.6	20.8	4.5
Male	74.2	3.3	69.5	4.6	79.2	4.5
Ethnicity/race						
White (non-Hispanic)	72.5	3.4	67.5	4.8	77.8	4.7
Black (non-Hispanic)	20.4	3.1	21.3	4.2	16.0	4.1
Hispanic	4.7	1.6	9.8	3.0	3.2	2.0
Other	2.5	1.2	1.3	1.2	3.0	1.9
High school completion status						
Graduate	61.6	3.7	71.0	4.9	71.1	5.1
Dropout/expelled	30.5	3.5	24.5	4.7	24.0	4.8
Aged out	7.9	2.1	4.5	2.2	5.0	2.4
Age (as of 1987)						
18 or less	28.2	3.4	32.6	4.7	23.6	4.8
19-20	56.1	3.7	58.1	5.0	63.0	5.4
21 or more	15.7	2.7	9.4	2.4	13.3	3.8
Percent in competitive paid employment in:						
1987	52.2	3.8	53.4	5.1	63.9	5.4
1989	67.4	3.6	72.3	4.6	100.0	0.0
N	530		281		245	

Note: Youth whose characteristics are tabulated in the first two columns are those in the exiter sample who were out of school (both high school and postsecondary schools) continuously (since the parent interview). The middle two columns represent the remaining youth in the exiter sample (i.e., those who did attend school during this period). The final two columns represent youth included in the regression equation reported in Table 9.

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